











FIG. 1

| | |
|---|---------|
|  | Play |
|  | Stop |
|  | Forward |
|  | Reverse |
|  | Record |

Player Function keys

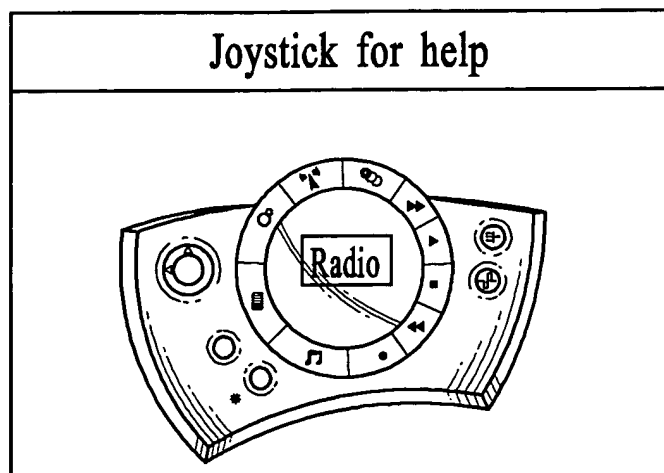
FIG. 2

| | |
|---|---------|
|  | e.DJ |
|  | V.Radio |
|  | Songs |
|  | Samples |
|  | System |

Mode/Direct Access keys

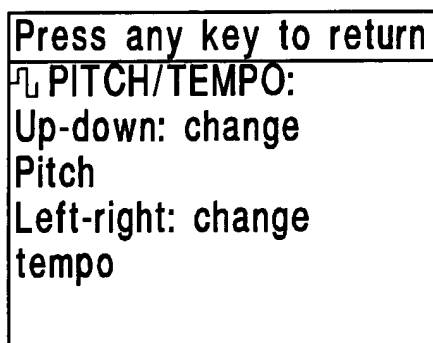
FIG. 3

FIG. 4



Home Screen

FIG. 5

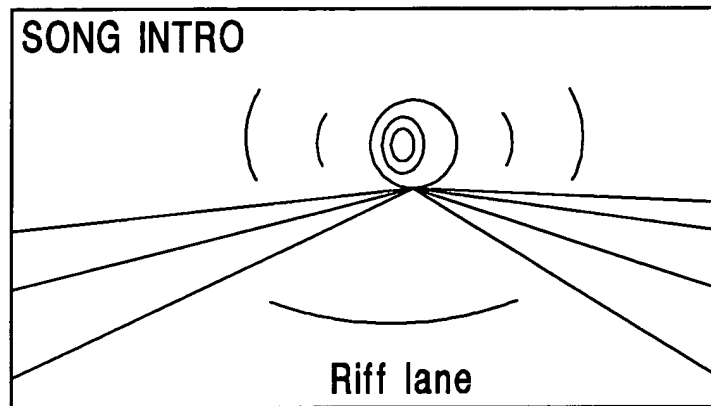


Help Screen

FIG. 6

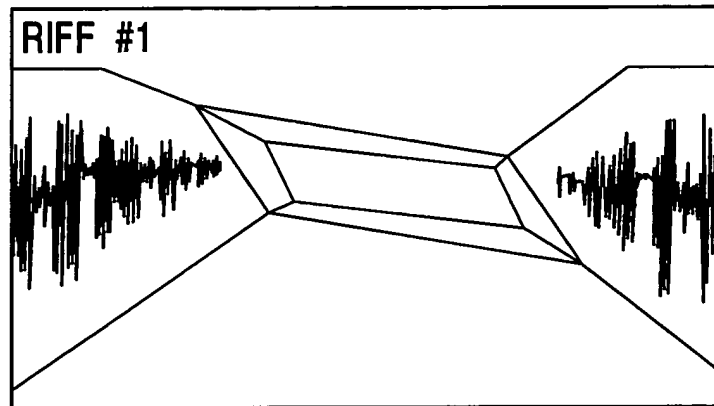


e.DJ Style Selection Screen



e.DJ I-Way Screen

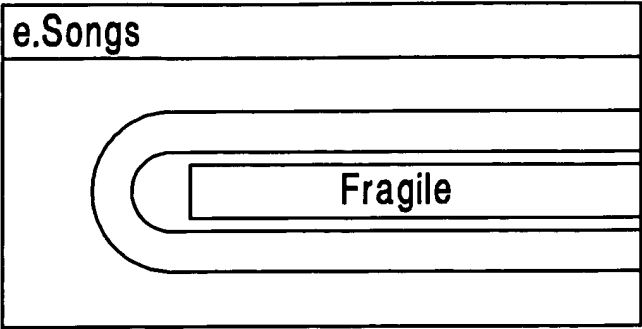
FIG. 7



e.DJ Underground Screen

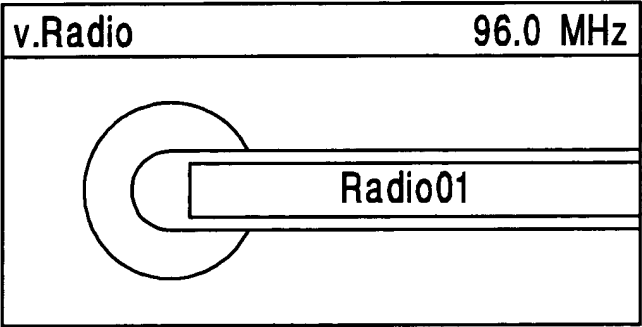
FIG. 8

FIG. 9



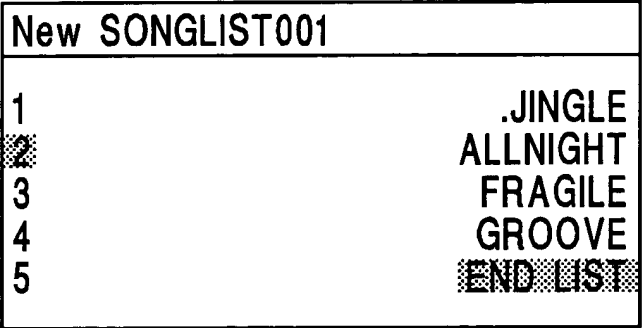
Play Song Screen

FIG. 10



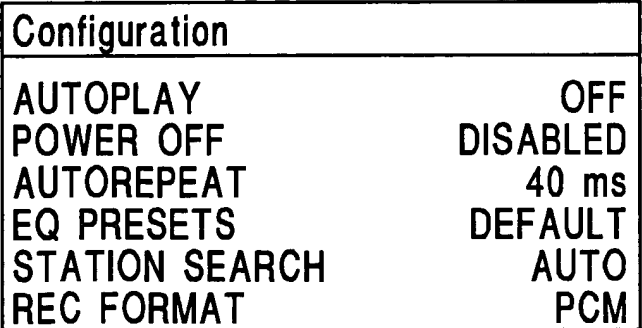
Play Radio Screen

FIG. 11

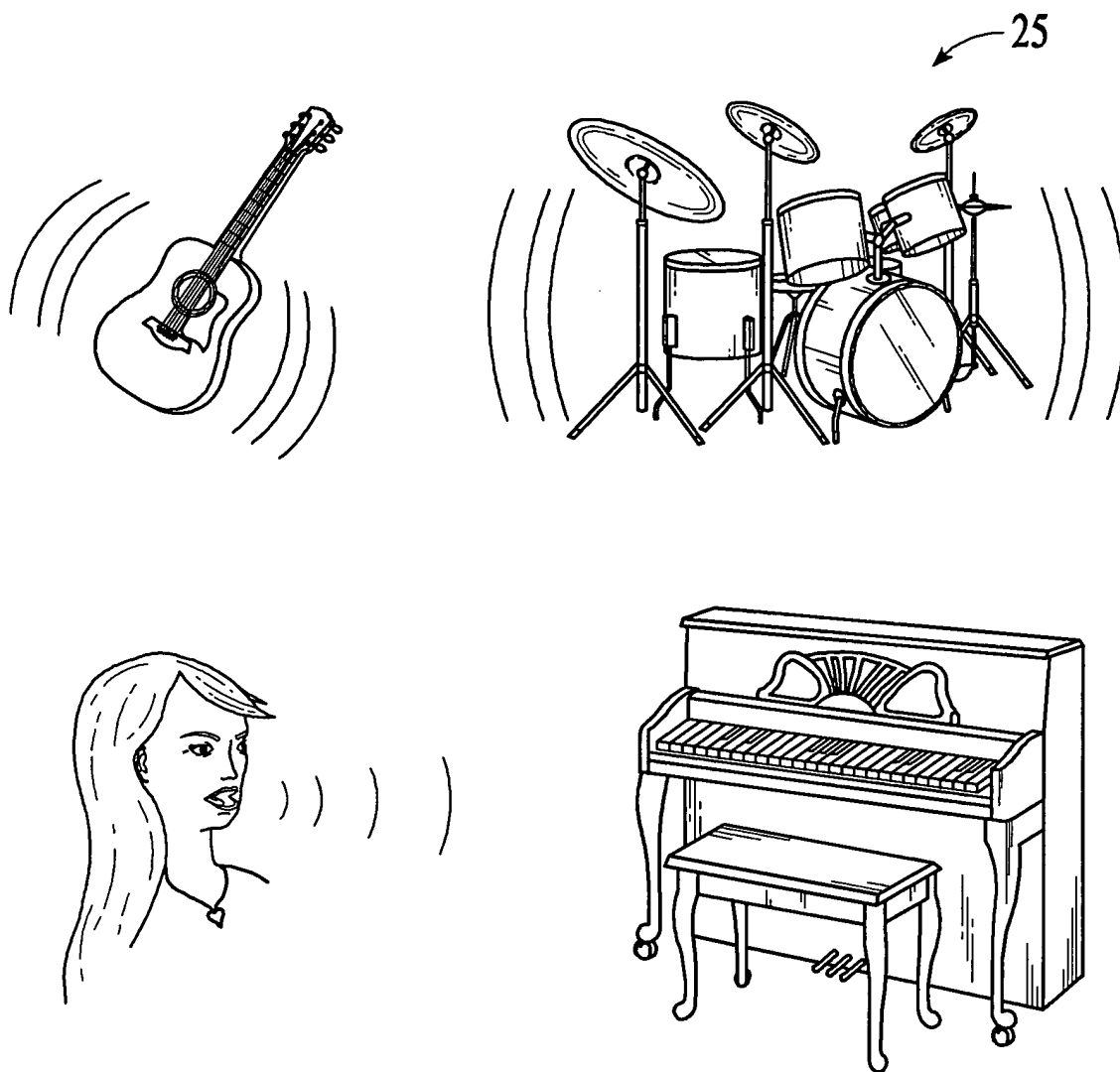


List Edit Screen

FIG. 12



Configuration Screen



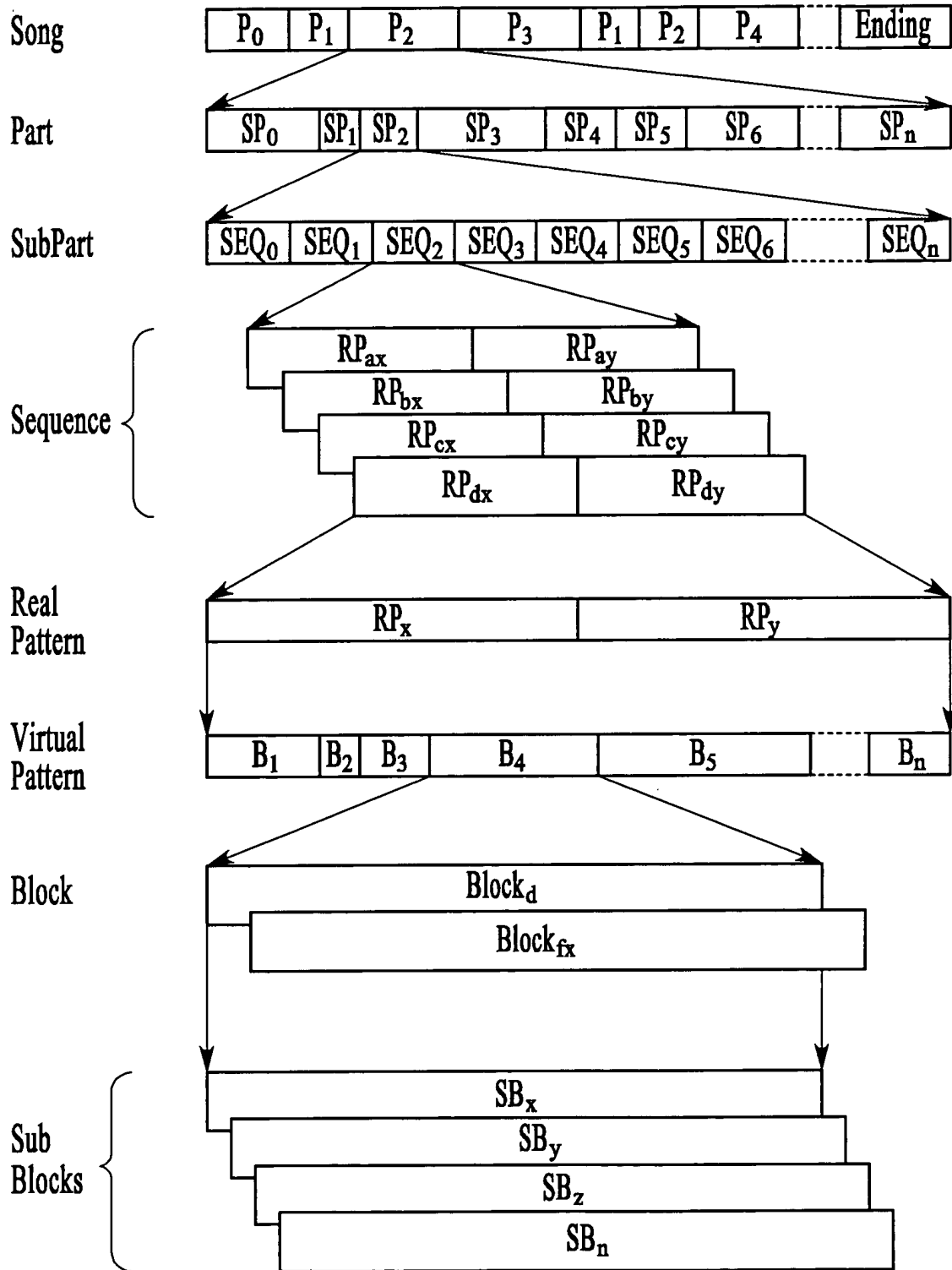
Alternative User Interface for I-Way Mode

FIG. 13

| Parameter | Values | Description |
|--------------|---|---|
| AutoPlay | On/Off | If AutoPlay is On, the MadPlayer automatically starts playing the first Play list contained on a SmartMedia card when inserted. |
| Power Off | Disabled, 1mn to 60mn in steps of 1mn. | Auto power off delay. The MadPlayer will power off automatically after this delay if no user action is detected. |
| AutoRepeat | 40ms to 600ms in steps of 20ms | Keyboard auto-repeat delay in milliseconds. Delay before repeating the corresponding action when a key is pressed continuously. |
| EQ Preset | Factory Woof Hitek Flat User | Presets for 4-band equalizer. Factory, Woof, HiTek and Flat are factory presets and fixed. User preset can be configured by the User via the System-Equalizer menu. |
| Mic State | On/Off | Microphone input is On or Off. |
| Mic Volume | 0 to 31 | Microphone volume. |
| Echo Level | 0 to 127 | Level of echo applied to microphone input |
| Echo Time | 0 to 127 | Microphone echo delay. 0 shortest, 127 longest. |
| Echo Feedbk | 0 to 31 | Echo feedback: 0 minimum feedback, 127 maximum feedback. |
| Rec Format | PCM HQFADPCM M | Format used to store recorded samples: PCM: PCM, 16bits mono, 19.31kHz HQFADPCM: High Quality ADPCM |
| Language | English Francais Espanol | Language used for the menus. |
| Sort Files | By Name By Type | Criterion used to sort files when displaying a list: by name (alphabetically) or by type (songs, samples, lists...). |
| Sort Presets | By Name By Freq | Criterion used to sort radio presets: by name (alphabetically) or by frequency. |
| Product | String | Read Only. Hardware version |
| Release | String | Read Only. Firmware version |

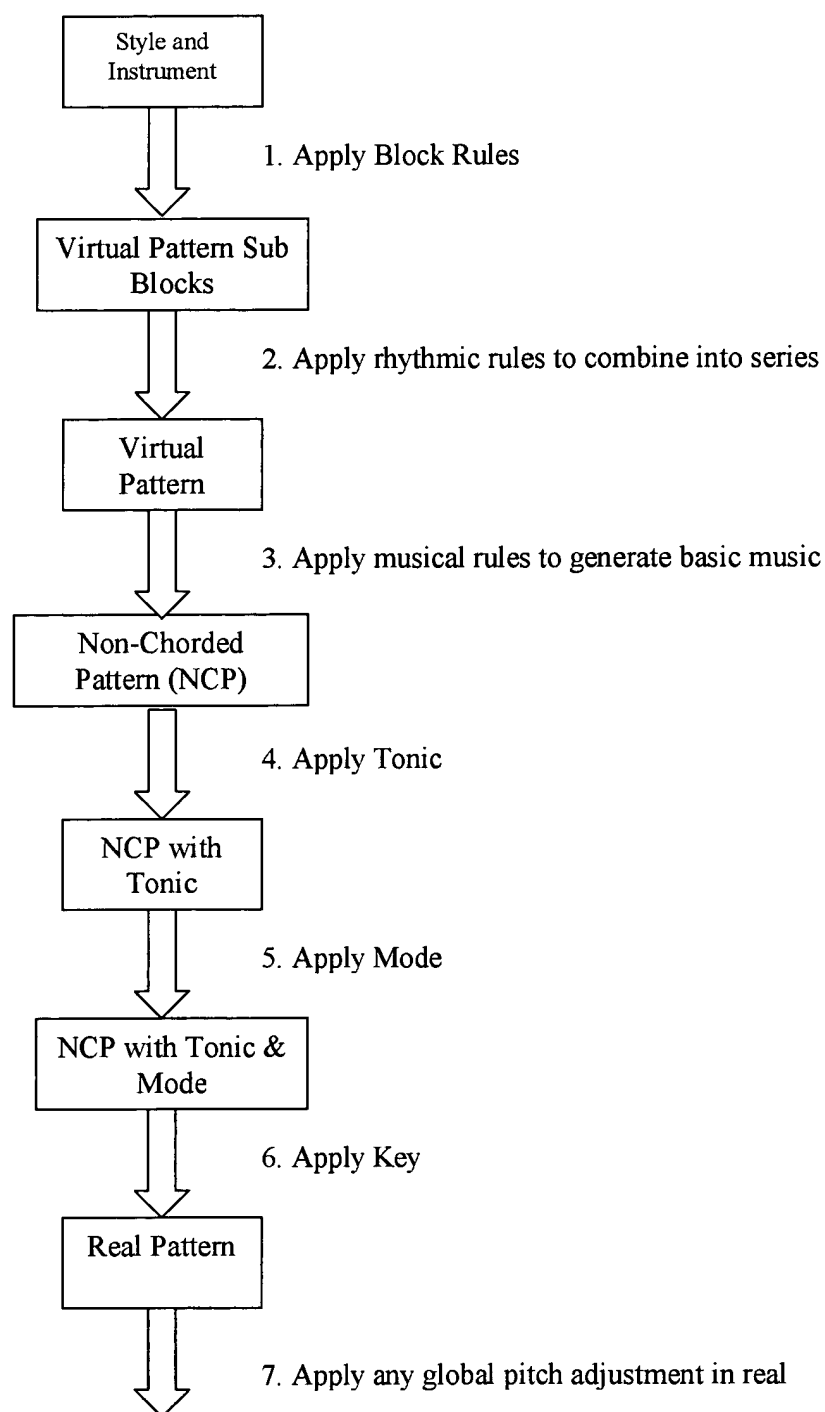
Configuration Parameters

FIG. 14



Song Structure

FIG. 15



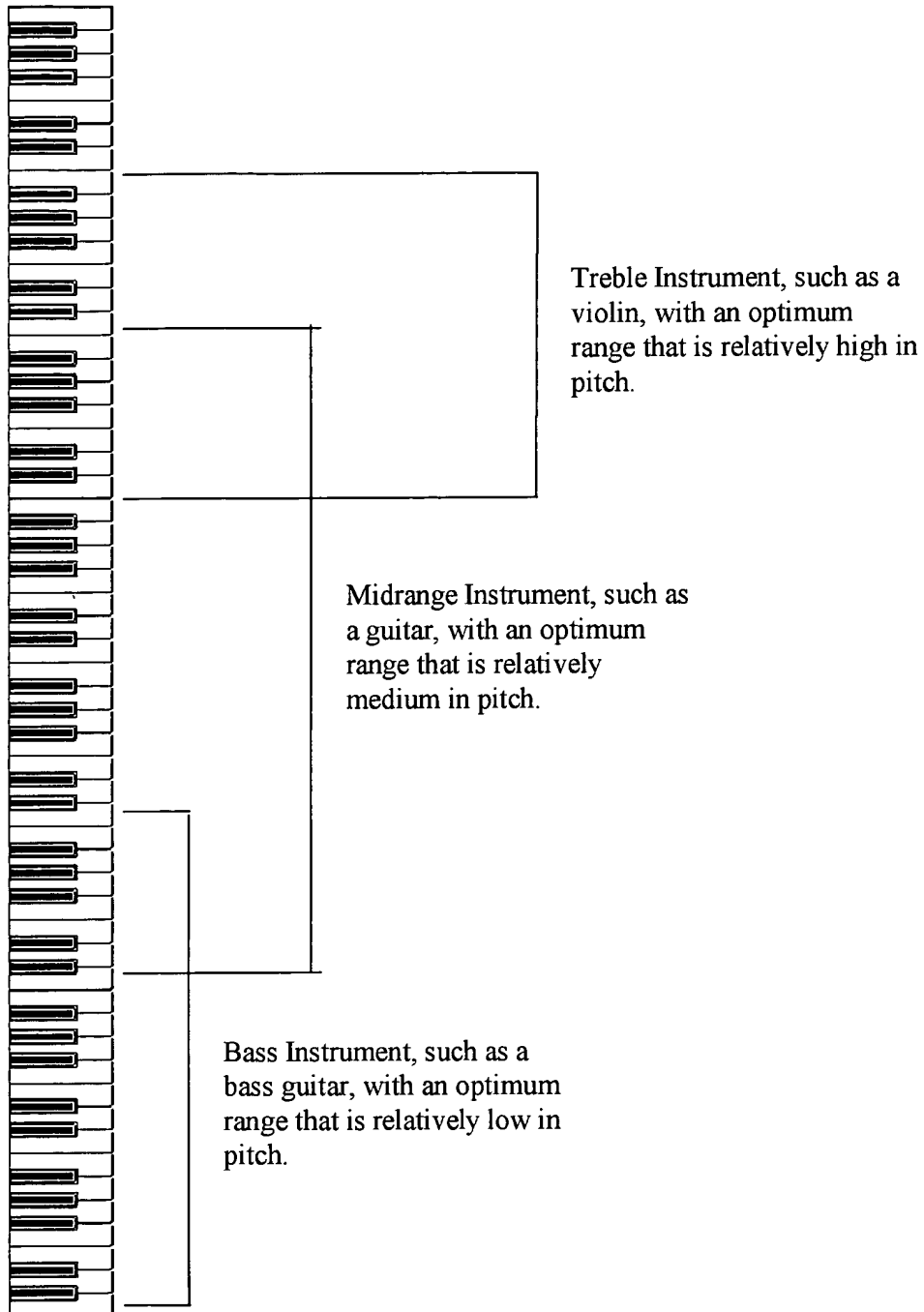
General Musical Generation Flow

FIG. 16

| <i>Hexadecimal Value</i> | <i>Internal Nomenclature</i> | <i>Potential Values</i> |
|--------------------------|--|--|
| 40 | Base Note | C, E, G, B |
| 41 | Magic Note 1 | +1, -1, +2, -2 |
| 42 | Magic Note 0 | +1, -1, +2, -2, 0 |
| 43 | High Note | +7 |
| 44 | Last Note | C, G |
| 45 | One Before Last Note | E, G, B |
| 46 | ALC Controller <ul style="list-style-type: none"> • Harmonic Note • Fixed Note | 0, +2, +4, +6, -3, -5, -7 any |

Examples of Virtual Notes/Controllers

FIG. 17



Example of Tessitura

FIG. 18

Replacement Sheet



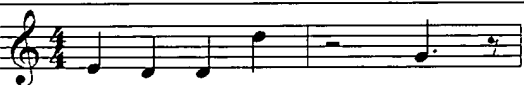

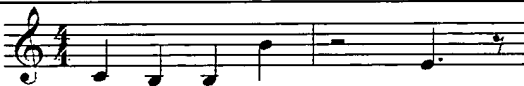
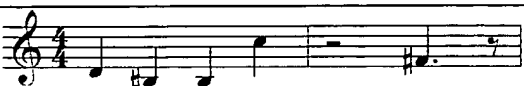
| | Key | | | |
|--------|-----|---|----|----|
| Chord | A | C | D | G |
| Offset | -3 | 0 | +2 | +8 |

FIG. 19

| Mode Type | Individual Notes | | | | | | | | | | | |
|----------------------|------------------|----|---|----|---|----|----|---|----|---|----|---|
| All Notes | C | C# | D | D# | E | F | F# | G | G# | A | A# | B |
| Natural | C | C | D | D | E | F | F | G | G | A | A | B |
| Lydian Descending | C | C | D | D | E | E | F# | G | G | A | A | B |
| Lydian Ascending | C | D | D | E | E | F# | F# | G | A | A | A | B |


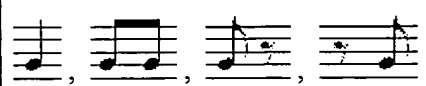

FIG. 20

Replacement Sheet

| | Musical Notation | Software Notation (QN=30) |
|---|---|--|
| Virtual Pattern Sub- Blocks |  | C4 = Base Note F#4 = Magic Note Type 1 D4 = Magic Note Type 0 C#4 = High Note C4 = Base Note |
| Virtual Pattern (VP) |  | 00 91 30 70 1e 81 30 00 91 36 64 1e 81 36 00 91 32 7f 1e 81 32 00 91 31 72 1e 81 31 3C 91 30 64 2d 81 30 |
| Non- Chorde d Pattern (NCP) |  | 00 91 34 70 1e 81 34 00 91 32 64 1e 81 32 00 91 32 7f 1e 81 32 00 91 3e 72 1e 81 3e 3C 91 37 64 2d 81 37 |
| NCP with Tonic (PwT) |  | 00 91 31 70 1e 81 31 00 91 2f 64 1e 81 2f 00 91 2f 7f 1e 81 2f 00 91 3b 72 1e 81 3b 3C 91 34 64 2d 81 34 |
| PwT with Mode (PwTM) |  | 00 91 30 70 1e 81 30 00 91 2f 64 1e 81 2f 00 91 2f 7f 1e 81 2f 00 91 3b 72 1e 81 3b 3C 91 34 64 2d 81 34 |
| Real Pattern (RP) |  | 00 91 32 70 1e 81 32 00 91 31 64 1e 81 31 00 91 31 7f 1e 81 31 00 91 3d 72 1e 81 3d 3C 91 36 64 2d 81 36 |

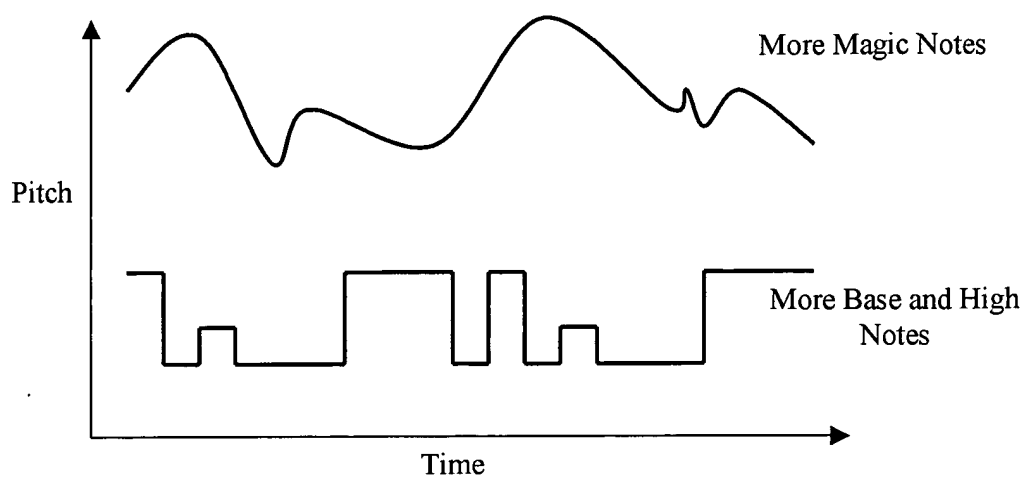
Example of VP-to-RP Flow

FIG. 21

| | Rhythmic Blocks/Sub-Blocks | Conditions |
|--|---|--|
| <p>Relative Rhythmic Density</p>  |  | <p>All variations, given:</p> <ul style="list-style-type: none"> • eighth note is smallest unit • length of 1 quarter note • all full rests are indicated separately as 'empty' |
| |  | <p>All variations, given:</p> <ul style="list-style-type: none"> • eighth note is smallest unit • length of 2 quarter notes • does not include 1 quarter note variations above |

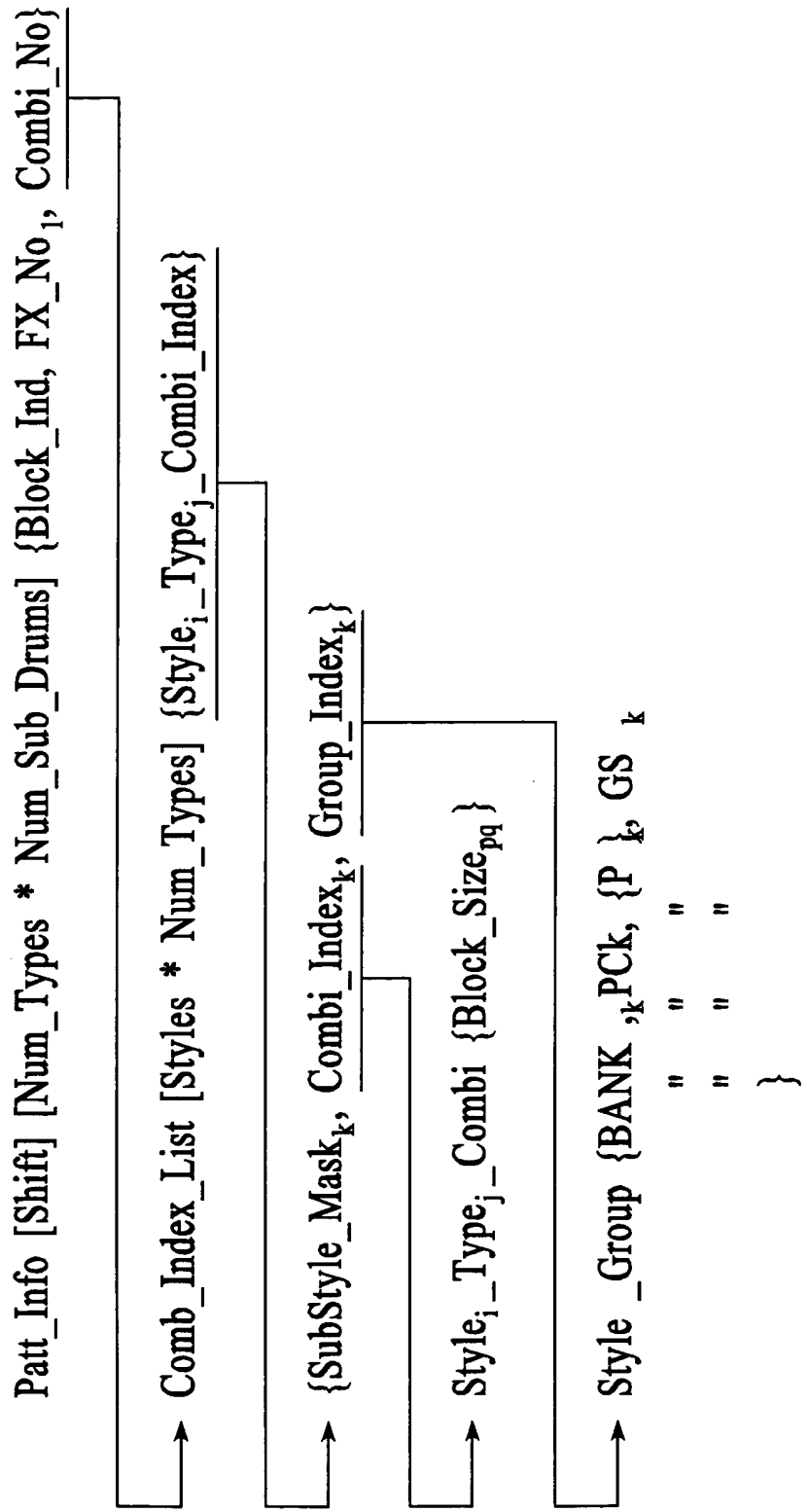
Rhythmic Variations based on Duration

FIG. 22



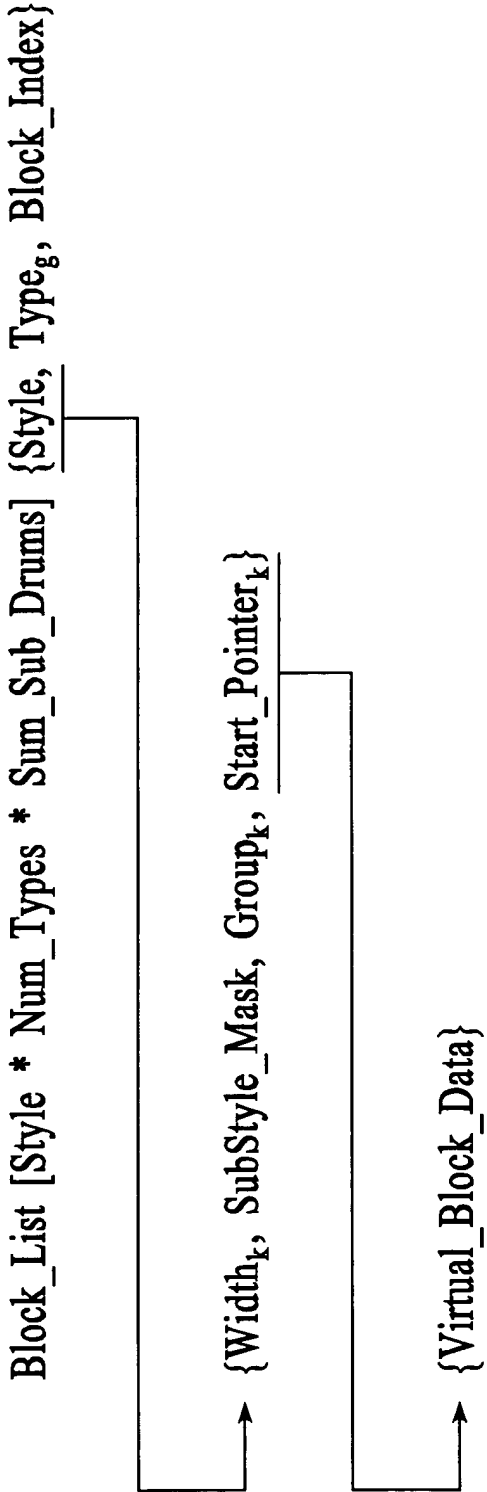
Relative Mobility of Note Pitch

FIG. 23



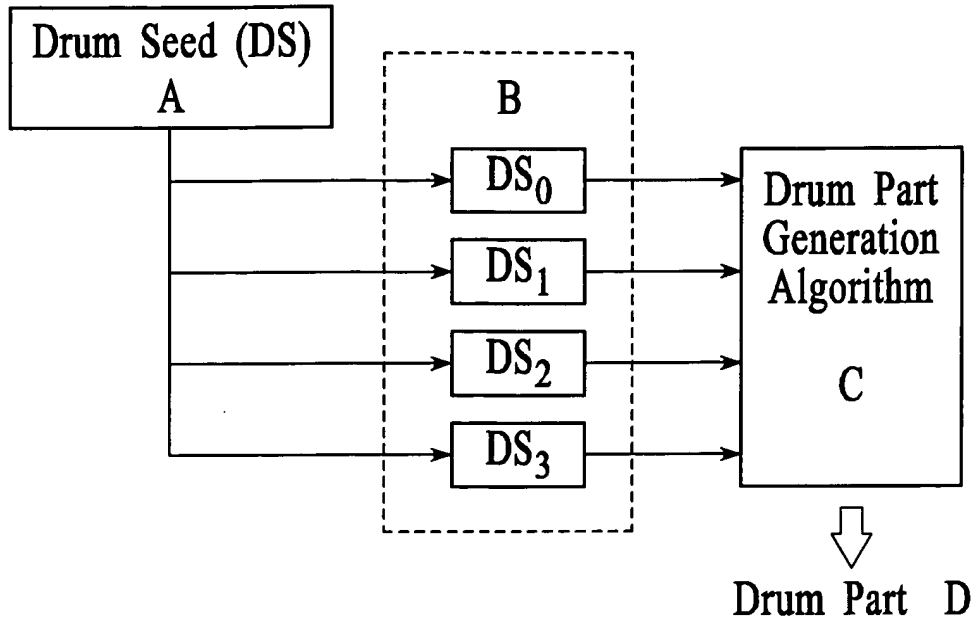
Pattern Structure Creation Example

FIG. 24



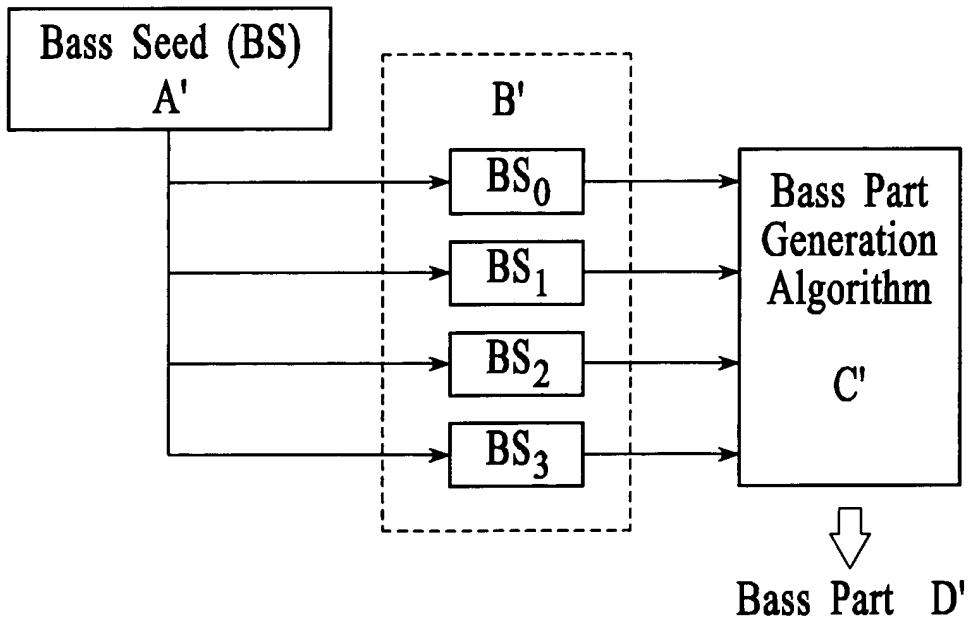
Block Structure Creation Example

FIG. 25



Pseudo-Random Number Implementation 1

FIG. 26



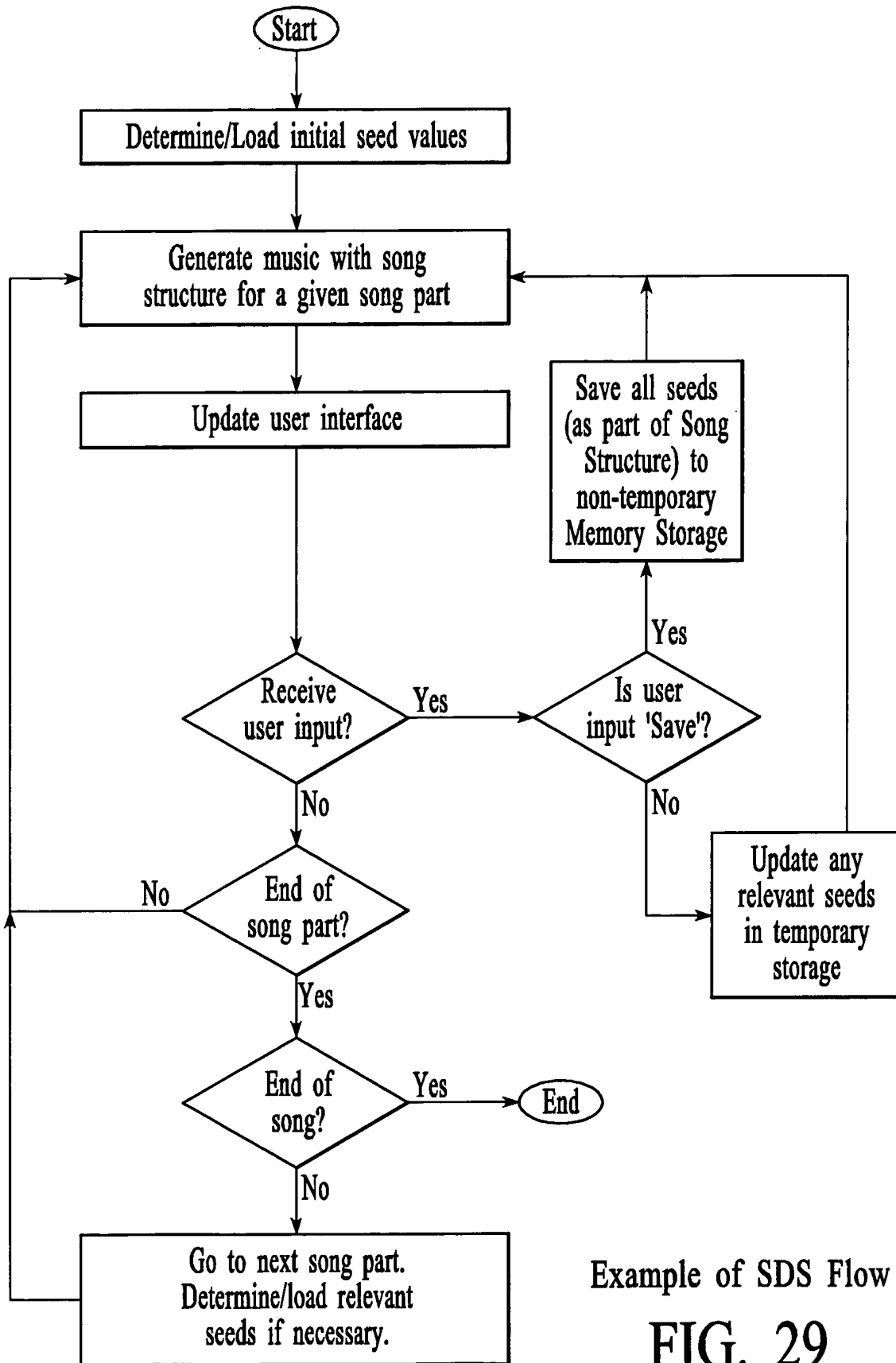
Pseudo-Random Number Implementation 2

FIG. 27

| | |
|------------------------|---|
| Application Revision | Firmware/application version used to generate the data structure |
| Style, SubStyle | The style and/or substyle |
| Sound Bank, Synth Type | The sound bank/synth type |
| Sample Frequency | How often a sample is played in song |
| Sample List | List of samples associated with the Style |
| Key | First Key used, pitch offset |
| Tempo | Start Tempo (e.g., in pulses per quarter note) |
| Instrument | Identification of a particular instrument in an instrument group. Indexed by type of instrument |
| State | State of instrument indexed by instrument type (e.g., muted, un-muted, normal, Forced play, solo, etc.) |
| Parameter | Instrument parameters indexed by instrument type (e.g., volume, pan, timbre, etc.) |
| PRNG Seed Values | Seed values used to initialize the PRNG routines |

Simple Data Structures

FIG. 28



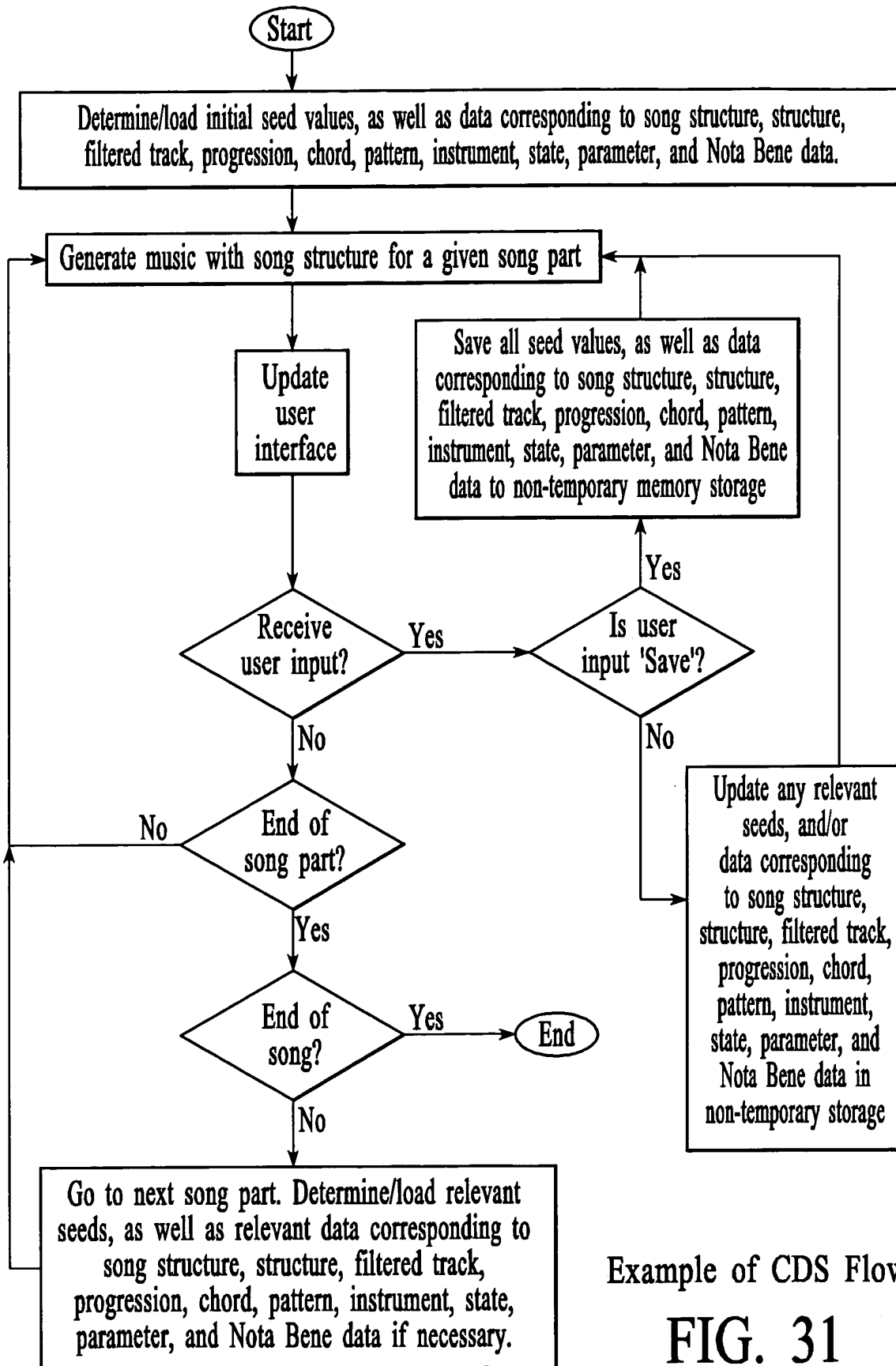
Example of SDS Flow

FIG. 29

| | |
|------------------------|---|
| Application Revision | Firmware/application version used to generate the data structure |
| Style, SubStyle | The style and/or substyle |
| Sound Bank, Synth Type | The sound bank/synth type |
| Sample Frequency | How often a sample is played in song |
| Sample List | List of samples associated with the Style |
| Key | First Key used, pitch offset |
| Tempo | Start Tempo (e.g., in pulses per quarter note) |
| Song Structure | Number of types, number of parts, sequence of parts, etc. |
| Structure | For every part: number of sub-parts, sequence of sub-parts, etc. Indexed by Part |
| Filtered Track | Type, function (e.g., sawtooth wave, sine wave, square wave, etc.), initial value, etc., of an effect. Indexed by Part. |
| Progression | Time signature, number of SEQs, list of maked types, etc. Indexed by Sub-Part. |
| Chord | Time stamp, chord vector, key note, progression mode, etc. Indexed by Sub-Part. |
| Pattern | Combination (Instrument), block data, effects data, etc. Indexed by Type. |
| Combination | List of instruments. Sub-set of 'Pattern' above. |
| FX Pattern | Effects data. Sub-set of 'Pattern' above. |
| Blocks | Block data. Subset of 'Pattern' above. |
| Instrument | Identification of a particular instrument in an instrument group. Indexed by type of instrument |
| State | State of instrument indexed by instrument type (e.g., muted, un-muted, normal, Forced play, solo, etc.) |
| Parameter | Instrument parameters indexed by instrument type (e.g., volume, param1, param2, etc.) |
| Nota Bene | Improvisation data (e.g., certain instruments or notes) that might be different each time the song is played. |

Complex Data Structures

FIG. 30



Example of CDS Flow

FIG. 31

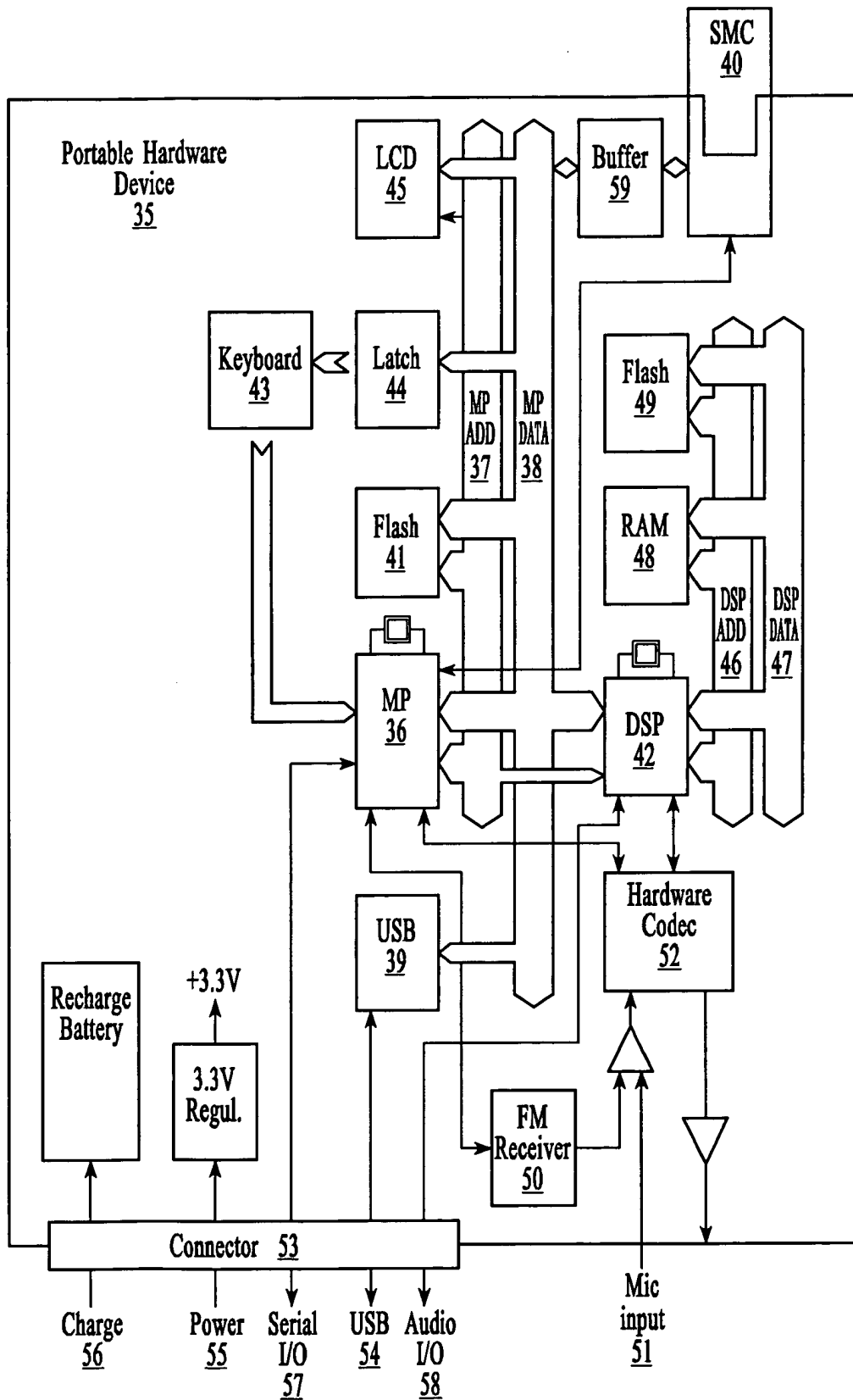
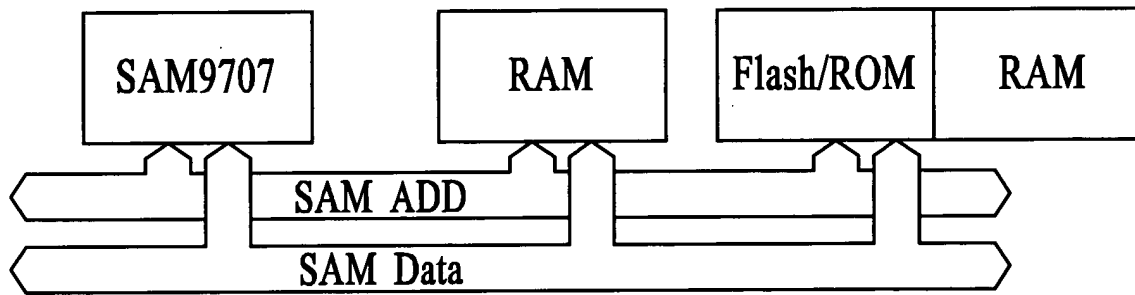


FIG. 32



Additional Variation

FIG. 33

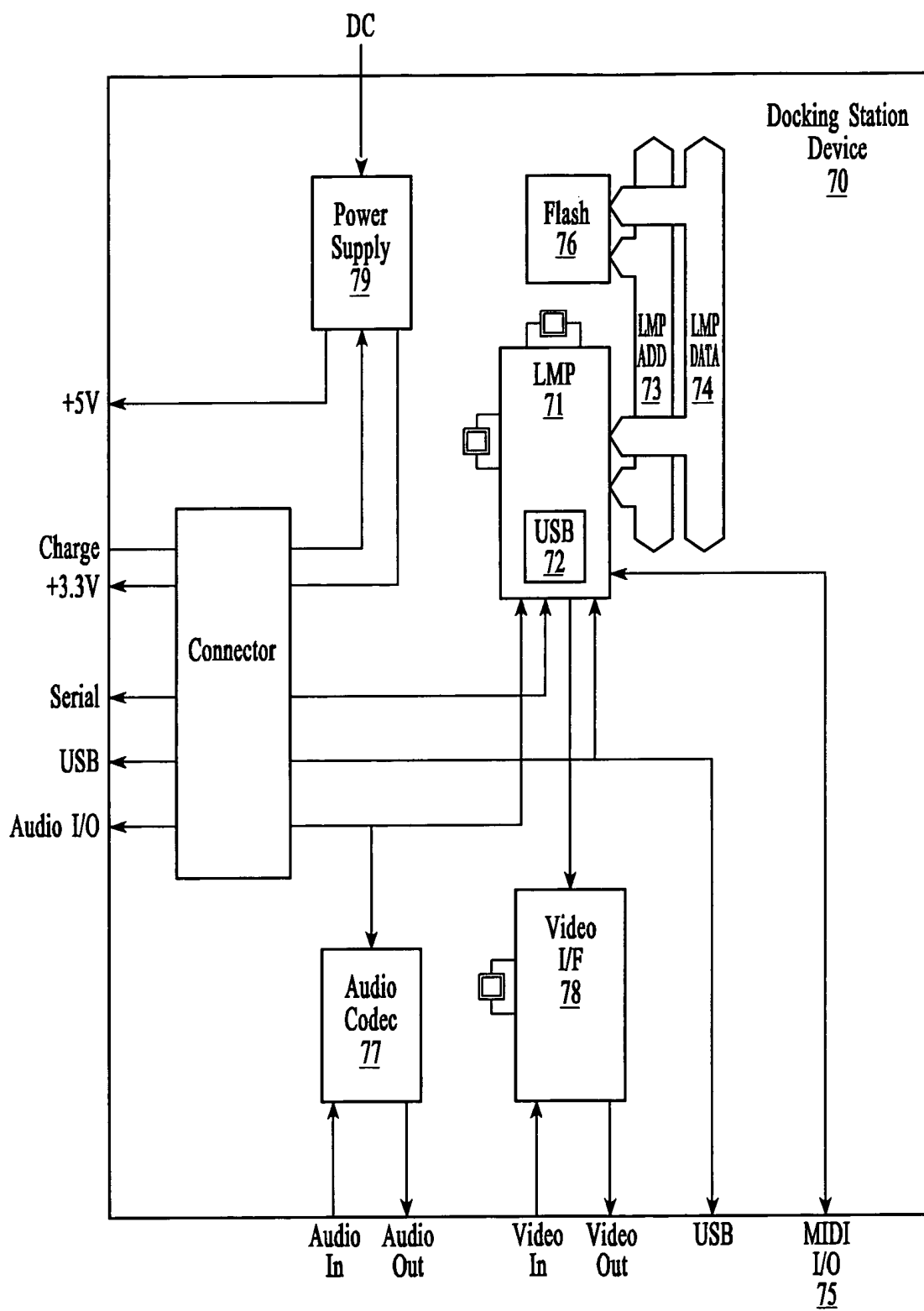
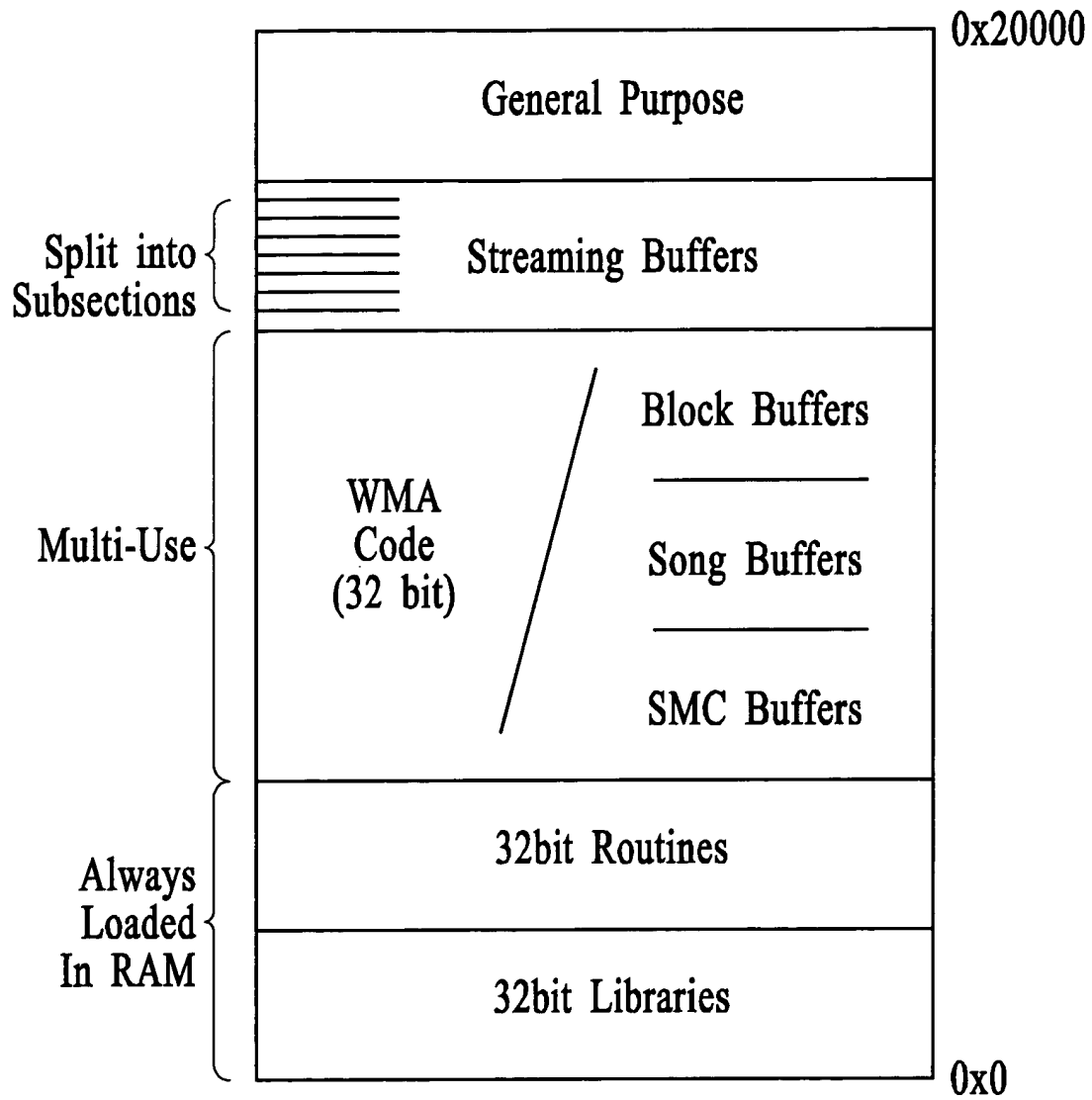
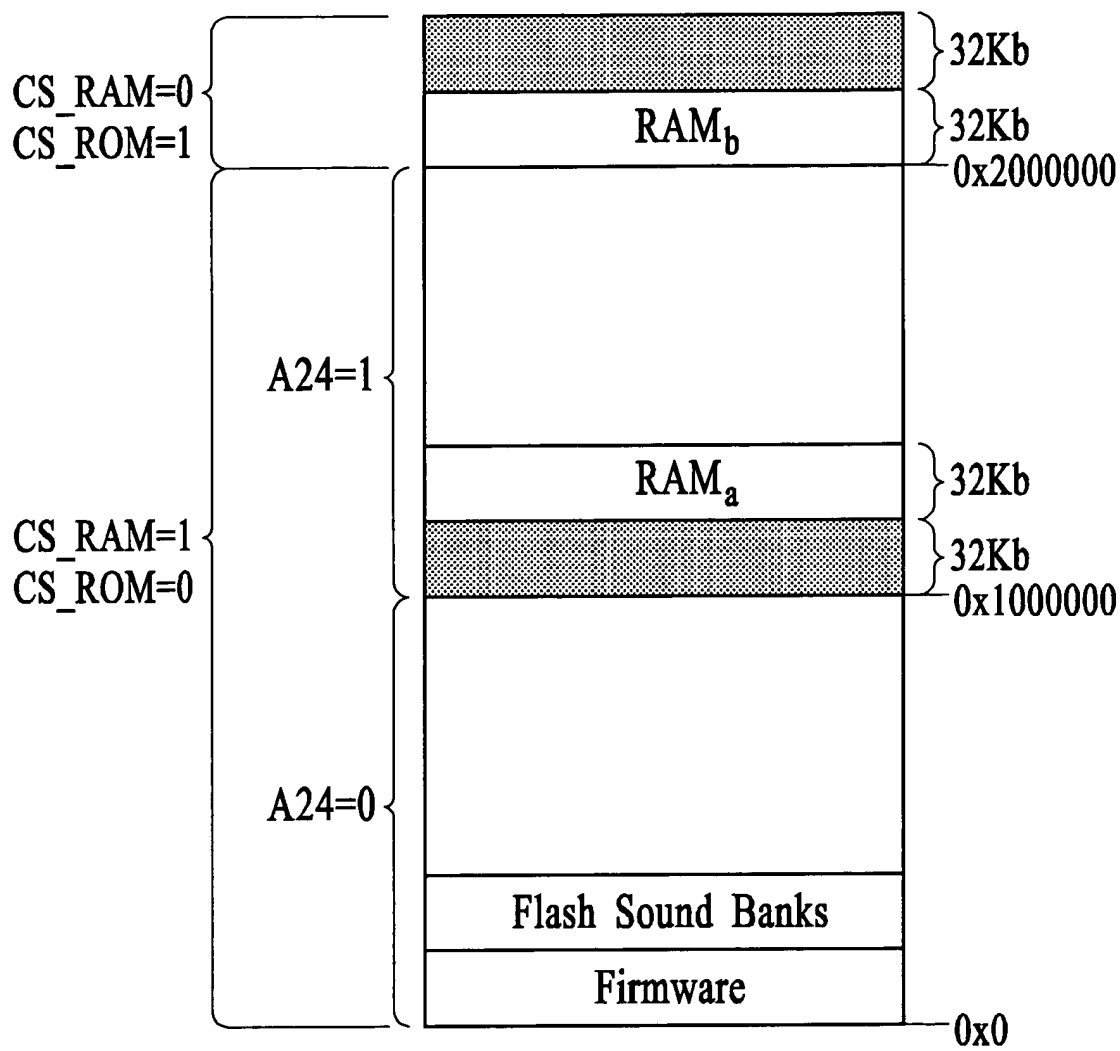


FIG. 34



Address Map for MP RAM

FIG. 35



DSP-Local RAM/Flash Address Space

FIG. 36

| A24 \ BOOT | 0 | 1 |
|------------|-------|-------|
| | 0 | 1 |
| 0 | Flash | RAM |
| 1 | RAM | Flash |

Bootstrap Mode Addressing

FIG. 37

| | | CS_RAM | | | |
|---|---|--------|-----|-------|-------|
| | | A24 | | | |
| | | CS_ROM | | | |
| | | BOOT | | | |
| | | | | 0 | 1 |
| 0 | 0 | NA | NA | Flash | RAM |
| | 1 | RAM | RAM | NS | NS |
| 1 | 0 | NA | NA | RAM | Flash |
| | 1 | NA | NA | NS | NS |

Normal Mode

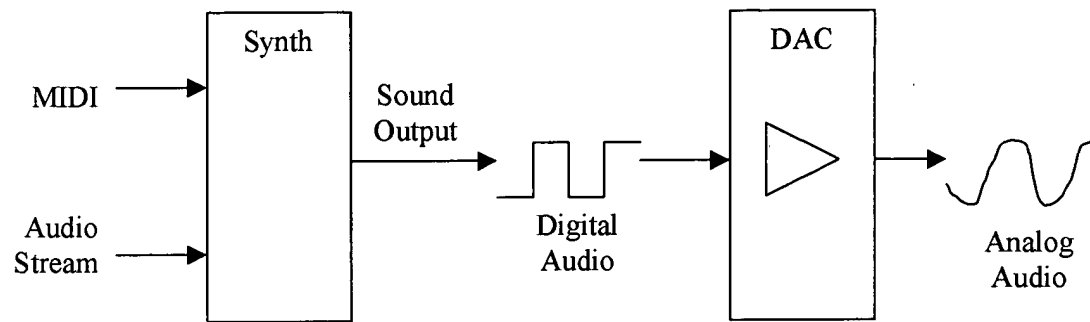
Upgrade Mode

CS_RAM and CS_ROM
are active low

NS = Nothing Selected

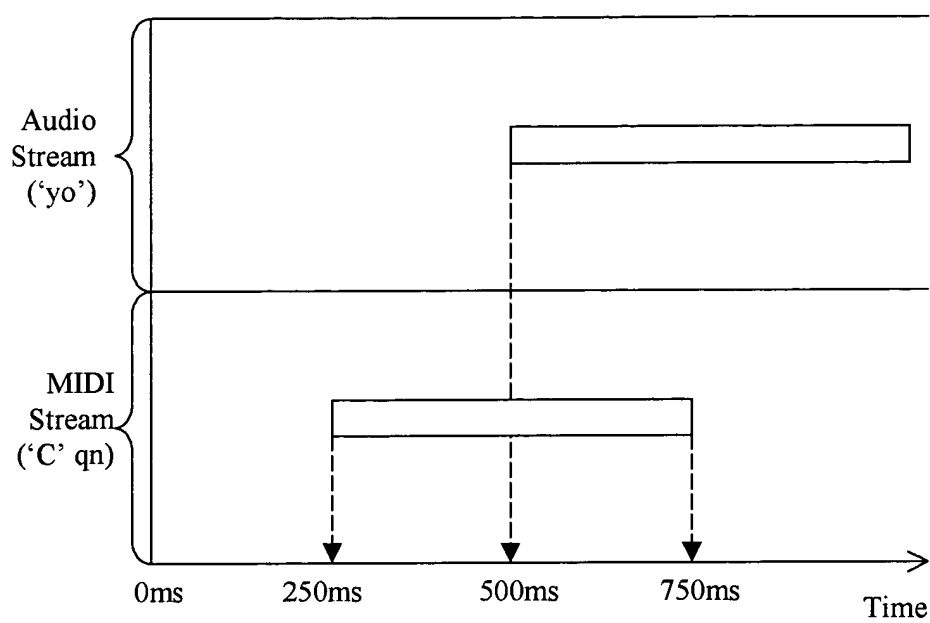
NA = Not Applicable

FIG. 38



MIDI/Audio Stream

FIG. 39



Simplified MIDI/Audio Stream Timeline

FIG. 40

| | NRPN Stream (Hexadecimal) | Indication/Meaning |
|----|--|--|
| 1 | B0 | Channel Number |
| 2 | 63 | NRPN Controller A (e.g., audio sample type) |
| 3 | 40 | Identification of sample type (e.g., long, short, stereo, mono, etc.) |
| 4 | 00 | Delta time |
| 5 | 62 | NRPN Controller B (e.g., audio effects type) |
| 6 | 00 | Identification of effects type (ping pong, ripple, phaser, distortion, etc.) |
| 7 | 00 | Delta time |
| 8 | 06 | Identification of register for NRPN Controller A value |
| 9 | 03 | NRPN Controller A value (play 3 rd audio sample in set, '00' is random) |
| 10 | 00 | Delta time |
| 11 | 26 | Identification of register for NRPN Controller B value |
| 12 | 07 | NRPN Controller B value (apply audio effect #7, '00' is random) |

Simplified NRPN Example

FIG. 41

| |
|--|
| \triangle 250ms |
| Note = On Channel = 1 Pitch = C |
| \triangle 250ms |
| NRPN Audio X, [P], [E] |
| \triangle 250ms |
| Note = Off Channel = 1 Pitch = C |

Simplified Special MIDI Type File

FIG. 42